92-197

No.

Supreme Court, U.S.
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In The

Supreme Court of the United States

October Term, 1992

SHAT-R-SHIELD, INC.,

Petitioner,

vs.

TROJAN, INC.,

Respondent.

Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR WRIT OF CERTIORARI

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QUESTIONS PRESENTED

1. Whether a patent owner that seeks infringement remedies should expect a lower court to follow this Court's doctrine of equivalence, as stated in *Graver Tank*, or the "all-limitations" doctrine stated by the Federal Circuit.

THE PARTIES AND RULE 29.1 LISTING

Petitioner Shat-R-Shield, Inc., is a North Carolina corporation that operates from facilities in Salisbury, North Carolina. Petitioner owns U.S. Patent No. 4,507,332 for a method of safety-coating fluorescent lamps.There are no other parent or subsidiary companies.

Respondent Trojan, Inc., is upon information and belief a Kentucky corporation, that operates in Mount Sterling, Kentucky.

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No.

In The

Supreme Court of the United States

October Term, 1992

SHAT-R-SHIELD, INC.,

Petitioner,

vs.

TROJAN, INC.,

Respondent.

Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

The petitioner, Shat-R-Shield, Inc., respectfully petitions for a writ of certiorari to review the judgments of the United States Court of Appeals for the Federal Circuit.

OPINIONS BELOW

Following a bench trial before the United States District Court for the Eastern District of Kentucky, the court made findings of fact and conclusions of law, which were unreported, and which are

reprinted at Appendix B hereto. The judgment declaring the petitioner's patent valid and enforceable but not infringed is at Appendix C.

The Court of Appeals for the Federal Circuit affirmed the finding of non-infringement, vacated the declaration of validity, and affirmed the remainder of the judgment. The Circuit Court's opinion is unreported and is reprinted at Appendix A hereto, and the judgment is Appendix D.

An opinion from an earlier companion case between the same litigants was put in issue, and that unreported opinion is reprinted at Appendix E.

STATEMENT OF JURISDICTION

The judgment of the Court of Appeals was entered May 1, 1992. The jurisdiction of the Supreme Court to review this judgment derives from 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

The petitioner's claim arose under Section 271(a) of the Patent Act, Title 35, that provides in pertinent part as follows:

> . . . whoever without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefore infringes the patent.

STATEMENT OF THE CASE

Presented for review on certiorari is a decision on an issue central to the protection of patents. The decisional rule for the doctrine of equivalence was established in 1950 by this Court. The

circuit added gloss to that rule in decisions involving patents for devices, that typically pose questions like if a hinge equates to a joint. The petitioner's case concerns a patented process, that must be viewed as a whole, and evaluating the equivalence of methodology, not mechanisms, presents an appropriate case for this Court to restore its doctrine of equivalents.

The petitioner is a small manufacturing firm that owes it existence to the patents it was granted for coated lamps and for lamp coating methods. Petitioner has pursued the protections accorded those patents in two infringement suits, both tried against respondent to conclusion. Each case turned on the patent disclosures of exposing "predetermined" portions of a lamp to "fluidized" particles of polymeric material. Presented here is a decision in which petitioner's proof of infringement by equivalence was measured incorrectly, because this Court's decisions on the doctrine of equivalence are not followed in the lower courts. Those courts' decisional rules try instead to telescope between viewing the equivalents of an invention "as a whole", or out of that context, as elemental parts. Moreover, the appellate panel here ignored the prior decision, between these same parties, that the respondent "predetermines" the extent of the coating applied to its lamps. *Compare*, Appendix 3a and Appendix 54a.

The doctrine of equivalence stated by this Court has been segmented by diverse decisions of various circuit panels. As a result, district courts and patent owners are unclear about how to prove whether patents are infringed by equivalents. Certiorari should be granted to clarify the doctrine of equivalence, so that patents are accorded protection against infringement by equivalents as a matter of settled law.

REASONS FOR GRANTING THE WRIT

I.

THIS COURT NEEDS TO MAKE IT CLEAR WHETHER ITS *GRAVER TANK* DECISION OF EVALUATING PATENT CLAIMS AND THEIR INFRINGING EQUIVALENTS AS A WHOLE HAS BEEN OVERRULED IMPLIEDLY BY THE FEDERAL CIRCUIT'S "ALL-LIMITATIONS" RULES.

The essential inquiry to determine infringement by equivalence asks whether the accused method performs substantially the function, in substantially the way claimed in the patent, to obtain substantially the result achieved by the patented method. *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950). The petitioner and every patent owner that endeavors to present proof and argument consistent with *Graver Tank* must further argue each variant of the equivalence inquiry that the Federal Circuit has developed.

Consider the patentholder that needs the protection of its patents, who must prove a case of infringement that covers every theory of equivalency. The patentee must try to chart a logical course between the macro view of equivalence as a whole, and the micro assessment of elemental equivalence. The dilemma of choosing one or both approaches to proving equivalence is widened, due to the uncertainty about whether to focus the threshold inquiry on the whole process or on the elements. The patentee has to prove that the invention and the accused process, when viewed as a whole, function in substantially the same way to achieve the same result, *Graver Tank, id.*, at 608, while also respecting circuit precedent that each element and all limitations in the claimed method be found in a corresponding feature of the accused method, and be shown to serve the same overall function to

achieve the same overall result. *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934-35 (Fed. Cir. 1987) *cert. denied*, 485 U.S. 961, 1009 (1988). This elemental view of equivalence is nearly a test for literal infringement. The tenet of *Graver Tank* that an invention and its equivalents must be viewed as a whole is often inconsistent with the circuit's view of each element, especially where as here the patent covers a process that must be viewed as a whole unlike a utility patent for parts combined into a device or product.

This uncertainty and confusion about the doctrine of equivalence leads courts to respect both approaches. *See Malta v. Schulmerich Carillons, Inc.*, 952 F. 2d 1320 (Fed. Cir. 1991) (*compare* J. Rich: noting the circuit "has never adopted the three prong approach to determining equivalency of a limitation", but the "function/way/result" equivalency analysis with respect to a claim limitation appears to be a helpful way to approach the problem"; *and*, J. Newman, dissent, finding "evidence not only as to his specific claim element but also as to the invention as a whole, leaving no theory of equivalency uncovered."), *cert. denied*, ___U.S. ___, 60 U.S.L.W. 3827 (1992); *King Inst. Corp. v. Perego*, 737 F. Supp. 1227, 1238 (D. Mass. 1990) (espousing the "as a whole" analysis then the "each limitation" view).

Other cases favor the approach stated by this Court in *Graver Tank. See Uniroyal Inc. v. Rudkin-Wiley Corp.*, 939 F.2d 1540, 1544 (Fed. Cir. 1991) (trial court considered "the operation of the invention and the accused deflector as a whole."), and *Sun Studs, Inc. v. ATA Equip. Leasing, Inc.*, 872 F.2d 978, 989 (Fed. Cir. 1989) (the "claimed and accused devices must be viewed and evaluated as a whole."); *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1240, (Fed. Cir. 1989), *cert. denied*, ___U.S. ___, 110 S. Ct. 154 (1989) (prejudicial to have "isolated [a] specific claim element . . . removed from the . . . claimed invention in its entirety"); *Andrew Corp. v. Gabriel Elec., Inc.*, 847 F.2d 819, 825 (Fed. Cir. 1988), *cert.*

denied, ___ U.S. ___,109 S. Ct. 312 (1988) (affirmed applying "doctrine of equivalents to the accused device in light of the claimed invention viewed as a whole").

In addition, various decisions make one or another approach the threshold inquiry. *See Casler v. United States*, 9 U.S.P.Q. 2d 1753, 1777-78 (Cl. Ct. 1988), *aff'd*, 883 F.2d 1026 (Fed. Cir. 1989) and *Crown Cork & Seal Co. v. Ethyl Corp.*, 11 U.S.P.Q. 1577, 1588 (E.D. Va. 1989) (both assessing equivalence first under *Graver Tank* standard, then finding comparison of elements unnecessary).

The Courts acknowledge the "confusion" about equivalence, *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 14 U.S.P.Q. 2d 1374, 1380 (D. Neb. 1990), and commentators recognize that the Federal Circuit must "feel its way" to a definitive statement of the doctrine of equivalence. Markey, *The Federal Circuit and Congressional Intent*, 41 Amer. Univ. L. Rev. 577, 579 (Spring, 1992); Eshelman, *Comment*, 65 Tul. L. Rev. 883, n. 11 (Mar. 1991).

The doctrine of equivalence has prime importance to patent attorneys and patent owners concerned about the protectable scope of their patents. This Court is asked to clarify the confusion in the circuit and district courts about the viability of the *Graver Tank* decision and about whether the infringement by equivalents determination views each elemental step, removed from the context of the process as a whole. Resolving the issue will "forestall" continued confusion, and serve purposes substantially the same as those recognized when certiorari was granted in *Dawson Chemical Co. v. Rohm and Haas Co.*, 448 U.S. 176, 179 and 185 at n. 4 (1980).

In petitioner's case, the district court decided against using the *Graver Tank* standards, then it read the "all-limitation" rule as requiring that a literal difference between elements precludes equivalence. This approach was affirmed as a factual issue of

infringement not shown to be clearly erroneous. The district court's rejection of *Graver Tank* was indicated by its refusal to accept the following proposed finding in petitioner's Rule 52, F.R.Civ.P. submission.

> The Trojan coating process for fluorescent lamps contains each claimed step of the '332 Patent literally "or with such variations as are consistent with its being in substance the same thing" as the process claimed in the '332 Patent. *Sanitary Refrig. Co. v. Winters*, 220 U.S. 30, 42 (1929); *Graver Tank and Mfg. Co. v. Linde Air Products Co.*, 399 U.S. 605, 608-09 (1950); *Graphicana Corp. v. Baia Corp.*, 472 F. 2d 1202, 1203 (6th Cir. 1973).
>
> Trojan's coating process "performs substantially the same function in substantially the same way" to yield the same result as the '332 Patent. *Atlas Powder Co. v. E.I. DuPont DeNemours*, 720 F.2d 1569, 1579 (Fed. Cir. 1984); *TWM Mfg. Co., Inc. v. Dura Corp.*, 772 F.2d 1261, 1269 (6th Cir. 1983).

The district court judge supplanted *Graver Tank* and the authorities cited by petitioner with circuit panel decisions that confuse infringement by equivalence with literal variations. In place of petitioner's proposed finding above, the court inserted the following.

> 3. A finding of infringement under the doctrine of equivalents requires finding that the accused method or device performs substantially the same function in substantially the same way to obtain the same result. Where

> the function is performed in a different way, there is no equivalence. *Spectra Corp. v. Lutz*, 839 F.2d 1579, 1582 (Fed.Cir. 1988). The fact that two devices achieve substantially the same result creates no presumption that they do so in substantially the same way. *Universal Gym Equipment Inc. v. Erwa Exercise Equipment Limited*, 827 F.2d 1542, 1548 (Fed.Cir. 1987). The numerous differences between the Trojan process and the claimed process compel a finding that the Trojan coating process and the claimed process compel a finding that the Trojan coating process does not coat bulbs in substantially the same way as the claimed process. Consequently, the Trojan method does not infringe Claims 1, 4, and 7 under the doctrine of equivalents. [(Appendix B, hereto, page 41a).]

The *Spectra* decision echoes the diverging views on equivalence. There, a wax and polymer composition claimed in the patent was replaced in the accused matter with only a wax. The panel acknowledged the "all elements" rule and noted the missing polymer, but its decision was based on the larger issue that the claimed and accused composition did not work in substantially the same way. In the petitioner's case, the district court relied further on citations to *Lemelson v. United States*, 752 F.2d 1538, 1551, 224 U.S.P.Q. 526, 533 (Fed.Cir. 1985) and *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 3 U.S.P.Q. 2d 1321 (Fed. Cir. 1987). These decisions take the narrowest view of omitted or substituted elements. In *Perkin-Elmer*, the panel said a substituted coupling was not equivalent, because that element failed the

function/way/result tests: to be equivalent, the "element substituted in the accused device . . . must not . . . substantially change the way in which the function . . . is performed. *Id.*, 822 F.2d at 1533. The petitioner and others find it confusing to reconcile this elemental test of function/way/result with, first, *Malta, supra* (this circuit "has never adopted the three prong approach to determining equivalency of a limitation"), and second with *Graver Tank*, which finds a patent claiming a "nonalkaline earth metal" ingredient was infringed by the substitution of an alkaline earth metal. Because the narrow rule was applied in petitioner's case, his patent that claimed a step of "exposing" the lamp to coating particles in a dry "fluidized" dispersion was different, and so nonequivalent, to coating with particles in a liquid "fluidized" dispension. This was the finding, despite uncontradicted evidence of numerous references in the prior art to the equivalence of using dry or liquid dispersions as a coating medium (Appendix B, 21a, ¶ (a); 21a-22a, ¶ (b); and 32a, ¶ (c)). "An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was." *Graver Tank, supra,* 339 U.S. at 609.

Had the district court recognized that *Graver Tank* still states the doctrine of equivalence, then its myopic evaluation of the equivalence issue may not have undermined petitioner's proofs and its patent. Only a clarification of the doctrine of equivalence and a remand to consider the issue properly can do justice in petitioner's case.

CONCLUSION

For all these reasons, a petition for certiorari should be granted.

Respectfully submitted,

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APPENDIX A — OPINION OF THE COURT OF APPEALS, *SHAT-R-SHIELD, INC. V. TROJAN, INC.* (FED. CIR. 91-1388, 91-1389, MAY 1, 1992)

NOTE; Pursuant to Fed. Civ. R. 47.8, this disposition is not citable as precedent. It is a public record. The disposition will appear in tables published periodically.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

91-1388, -1389

SHAT-R-SHIELD, INC.,

Plaintiff-Appellant,

v.

TROJAN, INC.,

Defendant-Cross-Appellant.

DECIDED: May 1, 1992

Before NIES, *Chief Judge*, NEWMAN and MICHEL *Circuit Judges*.

NIES, *Chief Judge*.

Shat-R-Shield, Inc. (SRS) appeals from the April 15, 1991, judgment of the United States District Court for the Eastern District of Kentucky, No. 86-221, holding that Trojan, Inc.'s process of applying a plastic coating to the glass envelope and portions of the

end caps of fluorescent lamps does not infringe U.S. Patent No. 4,507,332 (the '332 patent). Trojan cross-appeals the district court's holding that (1) the '332 patent is not invalid, (2) the '332 patent is not unenforceable,[1] and (3) Trojan is not entitled to an award of attorney fees. Trojan also asserts that SRS's appeal to this court is frivolous and warrants imposition of sanction. We *vacate* the district court's judgment with respect to validity and affirm the remainder of the judgment. Trojan's request for sanctions for the appeal is *denied*.

DISCUSSION

I. SRS'S APPEAL

A.

SRS appeals the district court's holding that Trojan's process for coating fluorescent lamps does not infringe the '332 patent. Because SRS expressly waived literal infringement at oral argument, the only question on appeal is whether the district court erred in holding that Trojan's process does not infringe the '332 patent under the doctrine of equivalents. SRS argues that the district court erred by (1) misinterpreting the scope of the claims, (2) using the accused process as a reference point for the doctrine of equivalents analysis instead of the patent's claims, and (3) failing to conduct a proper function/way/result analysis.

SRS contends that the district court interpreted the claims two different ways, broadly for the validity analysis and narrowly for the infringement analysis. However, upon application of the correct

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1. Trojan alleged that SRS's mislabeling of its products and false advertising constituted unclean hands and caused the patent to become unenforceable. Because we affirm the judgment of noninfringement, we need not address Trojan's argument.

claim construction, which we interpret as a matter of law, *Key Mfg. Group* v. *Microdot, Inc.*, 925 F.2d 1444, 1448, 17 USPQ2d 1806, 1809 (Fed. Cir. 1991), we find no legal error in the district court's infringement analysis.

Although distinctions exist between claims 1, 4, and 7, each of these claims includes the steps of "masking said pins and all of said and caps except said predetermined portion thereof" and "exposing said glass envelope and said predetermined portion of said end caps to a fluidized bed of powder of said polymeric material for a second predetermined period of time to apply a coating of said powder to said glass envelope and to said predetermined portion of said end caps."

The district court found that "the Trojan coating process does not coat bulbs in substantially the same way as the claimed process" and that the Trojan process is "fundamentally different" from the claimed process. Significantly, the district court also noted "[t]he concerns behind the doctrine of equivalents [are] not present in this case." *See London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538, 20 USPQ2d 1456, 1458-59 (Fed. Cir. 1991) (application of the doctrine of equivalents is the exception, rather than the rule, and is not simply the second prong of every infringement charge).

In the accused process, the lamp's pins are held by adapters. The lamps are lowered into a liquid solution of plastisol, a dispersion of extremely small particles of polyvinyl chloride (PVC) suspended in a liquid plasticizer, and then rotated. As the only contact between the liquid solution and the lamp occurs at the surface of the liquid, masking is not required to protect the pins. Also, because in the Trojan process "[t]he portion of the end caps which is coated varies from lamp to lamp, and is thus not 'predetermined,'" masking is not required to define a

predetermined coated portion of the end caps. Conversely, the masking claimed in the '332 patent protects the pins from exposure to the coating powder and defines the "predetermined portion" of the end caps which is to be coated. Accordingly, the district court specifically found that "the adapters of Trojan do not function as masks." SRS has not proven this finding clearly erroneous. There is no substitution of an equivalent for the masking step.

The '332 patent also requires "a fluidized bed of powder," i.e., powder supported in air. SRS argues that Trojan's plastisol is equivalent to the fluidized bed of '332 because both contain particles supported in a fluidizing medium; air in the '332 process, liquid plasticizer in Trojan's process. The district court correctly noted that powder coating and plastisol coating involve "fundamentally different mechanisms." When the lamp is removed from the fluidized bed of powder, it is covered with individual PVC particles. When a lamp is removed from the Trojan plastisol bath, it is coated in a liquid plasticizer which contains PVC particles. Moreover, the process claimed in the '332 patent produces a coating comprised only of PVC powder. The fluidizing agent, air, passes out of the system. In the Trojan process, the coating is comprised of both the particles of PVC and the fluidizing agent, the plasticizer.

While the end result, a coated lamp, may be comparable in each process, the Trojan process achieves this result in a different way from the process disclosed in the '332 patent with respect to both steps required and materials. We are unpersuaded by SRS's arguments that equivalency between the accused process and the limitations of the claims was established. Therefore, the district court's finding that the Trojan process does not infringe the '332 patent under the test set out in *Graver Tank & Mfg. Co.* v. *Linde Air Prods. Co.*, 339 U.S. 605 (1950), for determining infringement under the doctrine of equivalents, is not clearly erroneous. *Spectra*

Corp. v. *Lutz*, 839 F.2d 1579, 1582, 5 USPQ2d 1867, 1869 (Fed. Cir. 1988).

B.

SRS also asserts that the district court committed procedural "errors" by failing to narrow the issues under the partial summary judgment procedure of Fed. R. Civ. P. 56(d) and by allowing Trojan to name an expert witness beyond the date set in the pretrial order. Both of these rulings are discretionary with the trial judge and no abuse of discretion has been shown.

II. Trojan's Cross-Appeal

A.

While Trojan cross-appeals from the district court's judgment that the '332 patent is not invalid, it asks only that the judgment of validity be vacated if we uphold the judgment of noninfringement. This is in accordance with our usual practice. *Advance Transformer Co.* v. *Levinson*, 837 F.2d 1081, 1084, 5 USPQ2d 1600, 1603 (Fed. Cir. 1988); *Pennwalt Corp. v. Durand-Wayland Inc.*, 833 F.2d 931, 939, 4 USPQ2d 1737, 1743 (Fed. Cir. 1987), *cert. denied*, 485 U.S. 961 & 1009 (1988) (en banc); *Fonar Corp. v. Johnson & Johnson*, 821 F.2d 627, 634, 3 USPQ2d 1109, 1114 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1027 (1988). Accordingly, the district court's judgment holding that the '332 patent has not been proven invalid is vacated.

Appendix A

B.

Trojan cross-appeals the district court's refusal to award attorney fees under Fed. R. Civ. P. 11[2] and requests, as well, its attorney fees and costs on appeal under Rule 38 for frivolous appeal. We affirm the district court's denial of attorney fees and deny the Rule 38 request.

Trojan argues that SRS brought suit without having reasonable basis for believing Trojan was infringing the '332 patent. Trojan also charges that SRS made a claim of infringement totally devoid of merit and put forth frivolous arguments, thereby subjecting Trojan to litigation in bad faith. The district court expressly found,

> this action was brought in good faith and on a reasonable belief that the '332 patent may have been infringed. [SRS] and its attorney could have reasonably believed that they had a basis for filing the lawsuit and the Court finds that their conduct met the objective standard of reasonableness under the circumstances. The Court does not find that there was any improper purpose in filing this lawsuit.

Trojan would have us treat the statement by SRS's counsel, made shortly after the process patent issued, that "it was not proper" to sue under the process patent at that time, as, in effect, an admission that SRS did not know what process Trojan was then using. Trojan argues that SRS later filed this action without any further investigation.

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2. Trojan states that it relied on 35 U.S.C. § 285 (1988) as well but makes no argument that this is an exceptional case within the meaning of the statute. Thus, this statute has not been shown to apply.

Appendix A

SRS attempted to find out Trojan's process through discovery in a separate suit for infringement of its product patent. Thwarted in that effort, it filed this suit based upon an examination of the product. SRS's president, Mr. James D. Nolan, filed an affidavit to the effect that Trojan's lamps bore marks similar to lamps made using the process of the '332 patent. Trojan asserts Nolan's testimony is inconsistent with later testimony.

While others might have reached a different conclusion from the trial court on the issue of whether SRS had a reasonable basis for making the pleadings of its complaint, we are unpersuaded that the court here abused its discretion in denying sanctions. The exercise of discretion respecting sanctions, particularly the denial of sanctions, is the type of discretionary decision that is virtually unreviewable. It would be wholly inappropriate for an appellate court to impose trial sanctions, as Trojan urges, simply because it disagreed with a factual finding of the trial court. The trial court is clearly in the best position to "marshall the pertinent facts and apply the fact-dependent legal standard mandated by rule 11." *Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384,____, 110 L. Ed. 2d 359, 379-80 (1990). In sum, Trojan has not convinced us that the district court abused its discretion by refusing to award attorney fees under Rule 11. *Cooter & Gell*, 496 U.S. at____, 110 L. Ed. 2d at 381-82 (1990).

Trojan argues that SRS's appeal is frivolous as filed and as argued, citing what it asserts as the weakness of SRS's arguments and SRS's mischaracterization of the facts. Nonetheless, we hold that SRS's appeal is not frivolous and does not warrant sanctions under Rule 38.

APPENDIX B — OPINION OF THE DISTRICT COURT, *SHAT-R-SHIELD, INC. V. TROJAN, INC.* (E.D. KY., CIR. NO. 86-221, APRIL 15, 1992)

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF KENTUCKY
LEXINGTON

Civil Action No. 86-221

SHAT-R-SHIELD, INC.,

PLAINTIFF,

v.

TROJAN, INC.,

DEFENDANT.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

In this civil action, plaintiff Shat-R-Shield, Inc. alleges that defendant Trojan, Inc. has infringed, and continues to infringe, United States Patent no. 4,507,332. Defendant Trojan counterclaimed for a declaration of non-infringement and invalidity of the '332 patent. All issues pertaining to damages were severed for later consideration pursuant to rule 42(b) of the Federal Rules of Civil Procedure. The infringement and validity issues were tried to the Court beginning on November 13, 1990. The following Findings of Fact and Conclusions of Law are made pursuant to rule 52(a).

Appendix B

I. FINDINGS OF FACT

A. THE PARTIES

1. The Plaintiff Shat-R-Shield, Inc. (hereinafter "SRS") is a North Carolina corporation with its principal place of business at 116 Ryan Patrick Drive, Salisbury, North Carolina 28144.

2. The defendant Trojan, Inc., (hereinafter "Trojan") is a Kentucky corporation with its principal place of business at Old Owingsville Road, Mt. Sterling, Kentucky 40353.

B. THE SRS PROCESS PATENT

1. The patent in suit is United States Patent no. 4,507,332 entitled "Methods of and Apparatus for Coating the Glass Envelope and Predetermined Portions of the End Caps of a Fluorescent Lamp." The patent covers a particular method of coating a fluorescent light bulb with plastic. The original application for the patent was filed January 17, 1977, by James D. Nolan ("Nolan") and Axel T. Karlsson ("Karlsson"). This first application was abandoned and continued into Serial no. 516, 658, filed July 25, 1983, naming the same inventors. The United States Patent & Trademark Office examined the application and issued U.S. Patent 4,507,332 ("the '332 patent" or "the SRS Patent") on March 26, 1985.

2. SRS (formerly called Incoplas) owns the '332 Patent, and the process described in that patent is utilized by SRS to manufacture safety coated fluorescent lamps.

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C. RELATED LITIGATION

1. In earlier litigation between the same parties in this district, Civil Action No. 85-143, the validity and infringement of a related patent, No. 4,506,189 (DX-25) were in issue. The '189 patent ("the product patent") covered a fluorescent light tube or bulb having a plastic coating on it to prevent glass and other materials from dispersing if the tube breaks. There were four claims in the product patent, of which Claim 1 was the broadest. It read as follows:

> In a fluorescent lamp including a glass envelope and an end cap at each end of said glass envelope, the improvement comprising:
>
> integrally formed coating means surrounding said glass envelope and a predetermined portion of each of said end caps; and
>
> said coating means being transparent to light emanating from said fluorescent lamp and upon said glass envelope being broken into glass shards said coating means for maintaining said glass shards and said end caps in association thereby preventing the broadcasting of said glass shards.

2. In the prior litigation, Trojan contended that the claims of the product patent were invalid under 35 U.S.C. § 103, and that Trojan's coated fluorescent bulbs did not infringe the claims.

3. After a trial on the merits, findings of fact and conclusions of law were entered declaring the product patent was valid, and that Trojan had infringed the patent. Judgment was entered enjoining

Trojan from manufacturing or selling its coated fluorescent bulbs.

4. Appeals were taken by both parties to the Court of Appeals for the Federal Circuit. Trojan appealed from that part of the judgment holding the product patent valid and infringed. SRS appealed from that part of the judgment denying an accounting for damages, refusing to find that Trojan's conduct was wanton and willful and denying an award of attorneys' fees or treble damages.

5. On appeal, the Court of Appeals reversed the District Court and held that the product patent was invalid for obviousness under 35 U.S.C. § 103. *Trojan, Inc. v. Shat-R-Shield. Inc.*, 13 U.S.P.Q.2d 1732 (Fed.Cir. 1989) The basis for the decision of the Court of Appeals was that two prior art patents, the Thomas Patent No. 3,621,323 (DX-33) and the Evans Patent No. 3,602,759 (DX-34) made the product patent claims obvious to a person of ordinary skill in the art. Having held the product patent invalid, the Court of Appeals did not reach the other issues on appeal.

D. THE '332 PATENT IN SUIT

1. The '332 Patent describes the process invented by Nolan and Karlsson and each process step is set forth in the claims. All of the '332 Patent claims were pleaded, but for simplicity the parties and the Court have focused on the independent Claims 1, 4, and 7.

2. Claim 1[1] is representative of the three independent claims of the patent in suit and reads as follows:

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1. Claims 1, 4, and 7 are substantially similar, therefore only the full text of Claim 1 will be set forth in this opinion. Any significant points or differences in the claims will be noted when necessary.

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A method of coating the glass envelope of a fluorescent lamp and a predetermined portion of the end caps of said lamp with a coating of polymeric material and wherein said lamp is provided with at least one electrical connecting pin on each end cap and wherein said end caps are secured to said glass envelope at radial positions with respect thereto, said method comprising:

(a) securing said end caps against radial displacement with respect to said glass envelope;

(b) subsequently, preheating said fluorescent lamp to heat said glass envelope and at least said predetermined portion of said end caps to a first predetermined temperature above the melting point of said polymeric material for a first predetermined period of time;

(c) subsequently, masking said pins and all of said end caps except said predetermined portion thereof;

(d) exposing said glass envelope and said predetermined portion of said end caps to a fluidized bed of powder of said polymeric material for a second predetermined period of time to apply a coating of said powder to said glass envelope and to said predetermined portion of said end caps;

(e) subsequently, reheating said glass envelope and at least said predetermined portion of said end caps to a second predetermined temperature above said melting point of said polymeric material for a third predetermined amount of time to melt and fuse said powder on said glass envelope and said predetermined portion of said end caps to form said applied powder into a substantially uniformly thick coating of polymeric material; and

(f) subsequently, unmasking said pins and said end caps and unsecuring said end caps.

Subparagraphs (a) through (f) define the six separate steps of the claimed method.

3. As a predicate to determining infringement and validity, the Court first defines the meaning of the process steps claimed in the '332 Patent and the scope of the patent claims. In this regard, the Court considers the usual and accepted meaning of the words used in the patent claims, the meaning given those terms by the inventor, and evidence of how the terms are used by persons skilled in the art of plastic coating.

The patented process applies a safety coating to a common fluorescent lamp that is a glass envelope with end caps secured to each end. Fluorescent lamps have "at least one electrical connecting pin on each end cap" and these "end caps" are secured to the glass envelope of the tube at "radial positions," (Claim 1). Most fluorescent lamps are "provided with a pair of electrical connecting pins on each end cap" and these "pairs of electrical connecting pins

are in ... radial alignment with each other." (Claims 4&7).

The end caps are at radial positions with respect to the glass envelope and the pairs of electrical connecting pins are in radial alignment with each other so the lamp will fit into an electrical fixture and illuminate. The radial alignment of the end caps and pairs of electrical connecting pins must be maintained during and after the coating process or the pairs of electrical connecting pins will not fit into the electrical fixture.

(a) **Securing**. The first step in the '332 Patent process is "securing" the end caps of the fluorescent lamp to prevent their displacement or loosening during the preheating, coating, and reheating steps. The function of this step is, as stated in Claim 1, to secure the "end caps against radial displacement." Claims 4&7 express the function of securing the "electrical connecting pins against displacement out of ... radial alignment."

When asked to explain this step, James Nolan testified that it is accomplished by synchronizing the drives on each end of the lamp, and that SRS ran into trouble when it did not synchronize the drives. Securing is a quality control and precautionary measure made necessary because of variations in the end caps and the way they are placed on the lamp by the manufacturer. End caps are glued to opposite ends of the glass envelope with an adhesive that may melt in the heating steps, and this could cause the end caps to become loosened with respect to the glass envelope and the pairs of electrical connecting pins to become displaced from their radial alignment. Different fluorescent lamp manufacturers use different types and amounts of adhesives to attach the end caps. At the time the invention was made, the heat sensitivity of the end caps adhesive was more of a problem than today because of the improved adhesives. The result of the "securing" step is to eliminate this

occasional problem of loose end caps and misaligned electrical pins.

One mode of "securing" taught in the '332 Patent specification is to engage the end caps or the pins of the lamp and to impose "sufficient force to securely engage the opposed end caps." (col. 5, line 5). The patent describes and the patent drawings depict springloaded elements that engage and secure the end caps and electrical connecting pins of the lamp. (Figs. 5&6 of PX-4).

Securing maintains the original placement and alignment of the end caps and the electrical connecting pins on the lamp during the heating and coating steps of the process. ('332 Patent, col. 5, lines 23-32). Claim 7 additionally incorporates rotation of the lamp as part of the process. This rotation is imparted via the securing means which as stated in the specification "engage the end caps with sufficient force such that when the elements are rotated ... rotation is imparted to the fluorescent lamp." (col. 5, lines 19-21). The securing step in Claims 1, 4, and 7 holds the end caps and pins secure so that "they will not be moved out of such radial alignment during the subsequent steps" of the process. (col. 5, lines 30).

(b) **Preheating**. The next step claimed in the '332 Patent is preheating the "glass envelope and at least [a] predetermined portion of [the] end cap to a ... predetermined temperature above the melting point of the polymeric material ... for a first predetermined period of time."

The inventor Nolan explained that preheating promotes adherence between the polymeric coating material and the glass envelope and end caps. Nolan also explained that the time and temperature of the preheating affects the thickness of the final coating.

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The '332 Patent claim language requires that the preheating temperature be above "the melting point" of the polymeric material used for coating. The step of preheating above the melting point means to apply heat to a temperature that will cause particles of polymeric coating material to soften or to become tacky or sticky so that the particles cling to the heated article.

The inventor Nolan testified that preheating above the melting point in his invention meant heated enough to make the polymeric material stick to the lamp, and the Court finds that this term would mean the same to one of ordinary skill in the art.

Dr. Philip Reucroft of the University of Kentucky College of Engineering, an expert on Materials Sciences, agreed that persons in the plastic coating art use the terms melting point, sintering point, and softening point interchangeably. Reucroft corroborated this by reference to published scientific literature, specifically the text by Swarj Paul, and by his reference to prior art patents. The interchangeable use of these terms appears in DX-38 the Dettling Patent no. 3,414,409 (col. 1, lines 61-2: "temperature above the sintering or melting point of the coating material"; and, col. 4, lines 11-15: "the sintering or melting point of the coating material ... and the melting or softening point"), as well as in DX-35 the Al Patent no. 3,565,664 (col. 3, line. 58) ("the sintering or melting temperature of a thermoplastic"); see also DX46 Knapsack, GB #759,214 at lines 12-13 and 26-27.

The Modern Plastics Encyclopedia (DX-11) lists the properties of polymeric materials, including the polyvinyl chloride polymeric material used by defendant Trojan, and it refers specifically to "melting" and to the "melting" temperature of those materials. No evidence suggests that the inventors meant the "melting" limitation to be inclusive only of crystalline polymers.

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The greater weight of the evidence shows the inventors intended that melting point would include temperature sufficient to soften both crystalline and amorphous polymeric materials. Thus, the Court concludes that the term melting point as applied to polymeric material, including PVC, is synonymous with the softening or sintering temperature that promotes adherence of the polymeric material to the glass envelope and the predetermined portion of the end caps of the lamp.

The optimum time and temperature parameters to melt the chosen polymeric coating material are predetermined. One way that the preheating to melting function can be achieved is with a "radiant" or "convection heater" ('332 Patent, col. 4, line 4) including an oven. The inventors recognized that "advantageously" the fluorescent lamp is preheated "to a temperature within the range from about 150° F to 400° F for a period of time in the range from about 5 seconds to 4 minutes." (col. 6, lines 29-33). As a result of preheating, the softened polymeric material will stick to the glass envelope and portions of the end caps of the fluorescent lamp during the coating step described below.

(c) **Masking**. The next step in the '332 Patent is masking a portion of the end caps and all of the electrical connecting pins. The word mask is usually defined as a cover. In the '332 Patent claims, the mask covers the electrical connecting "pins and all of [the] end caps except [a] predetermined portion thereof." (Claims 1,4&7). The preamble of Claim 1 specifies coating a "predetermined" portion of the end caps of the lamp. In the claimed process, the extent of the coating is predetermined by masking. Step (c), the masking step, is carried out after preheating the bulb. Masking of the electrical pins is essential in powder coating utilizing a fluidized bed. The mask is illustrated in Figure 5, Part No. 21. Step (c) calls for "masking said pins and all of said end caps except said

predetermined portion thereof."

The masking step functions to establish parameters for the extent of the coating to be applied. Specifically, the polymeric material contacts only those "portions of the end caps not covered by the masking element" (col. 5, line 50&68). The mask is designed to keep polymeric material particles off of the electrical connecting pins. The other parameter is permitting the polymeric material to coat that portion of the end caps that was predetermined to result in a safety coating capable of maintaining the end caps in association with pieces of the glass envelope should the lamp be broken. Masking can be achieved with covers that are concentric but of smaller diameter than the end cap. (Figs. 5&7). The patent specification suggests that the "masking" and "securing" steps can be accomplished with a "combination" element (col. 4, lines 37&49). In these ways, masking assures that no more than the predetermined portion of the end caps is coated and that the covered electrical connecting pins are not coated.

(d) **Coating**. The preheated glass envelope and predetermined portions of the end caps are then exposed to powder or particles of the polymeric coating material in a fluidized bed. The polymeric particles are "fluidized" which means that the particles are dispersed in a fluidizing medium. The function is "to apply a coating" of polymeric particles to the glass envelope and to only the predetermined portions of the end caps. (Claims 1,4,&7).

The only coating method described in the specification of the patent in suit utilizes a "fluidized bed" of powdered plastic. The only powdered plastic disclosed in the specification is Surlyn, a product of the DuPont Chemical Company, (col. 6, lines 45-49). The powdered Surlyn is placed in a container having a perforated plate to support the powder. Air is blown upwardly through the

perforated plate and through the powder so as to suspend the powder in the air stream. (Column 4, lines 6-14). The specification states that the construction of the fluidized bed was known to those skilled in the art. (col. 4, lines 6-9). To obtain the coating on the bulb, the bulb, which has been preheated to a temperature above the melting point of the Surlyn powder, is immersed in the bed, so that powder particles collect on the bulb. The bulb with the adhering powder particles is then removed from the bed and placed in an oven where it is reheated to a temperature above the melting point of the powder, so that a relatively smooth coating is obtained.

Defendant's expert Dr. Tony Hancock gave the opinion that heat makes PVC gelatinous but, to a chemical engineer, gelation and melting define different conditions. Perhaps a doctor of chemical engineering would draw distinctions between melting and gelation based on the molecular structure of the polymeric material. However, the inventor Nolan, who is one of ordinary skill in the plastic coating art, is not a chemist, not an engineer, and holds no post-secondary degree. The specification that Nolan gave to his patent application used "melting" to describe the softening he observed when plastic is heated. The Court's interpretation of the claimed steps in the '332 Patent of preheating and reheating above the melting point is as Nolan testified. Dr. Reucroft and Dr. Hancock agreed that unheated PVC particles in plasticizer do not stick together, but when sufficient heat is applied, it causes these solid PVC particles to soften and become sticky. To a person of ordinary skill in the art, this softening with heat would be described as melting. *See Specialty Composites v. Cabot Corp.*, 845 F. 2d 981, 985 (Fed. Cir. 1988) (PVC in plasticizer will "have a lower melting point"). Furthermore, the function of the claimed preheating is to melt powder so that the powder will adhere to the bulb.

In sum, the coating step in the '332 Patent is "exposing" the

entire "glass envelope" and only the "predetermined portions of the end caps" to particles of polymeric coating material which are dispersed in a fluidizing medium. As previously set forth, the powder collects on all of the unmasked surfaces of the bulb. The inventors Nolan and Karlsson testified that the surface level of the fluidized bed could be controlled to be virtually flat just like a liquid.

(e) **Reheating**. The coated lamp is next reheated according to time and temperature conditions determined in advance to be effective to "melt and fuse" the particles of polymeric material into a "substantially uniformly thick coating." (Claims 1,4,&7). Again the lamp is exposed to a temperature "above the melting point" of the polymeric material, as indicated in the preheating step. However, the reheating step is longer, so that the lamp is heated for enough time to melt and to fuse the particles of polymeric material into a coating. Claim 7 adds the aspect of rotating the lamp during the reheating step.

(f) **Unmasking and Unsecuring**. The last step entails removing the masks that covered the pins and removing the coated lamp from the securing apparatus. Step (f) of Claim 1 calls for "unmasking said pins and said end caps and unsecuring said end caps." These steps are the reverse of steps (c) and (a) respectively.

E. VALIDITY

1. STANDARD

Trojan alleges that the claims of the patent in suit are invalid under 35 U.S.C. § 103. The determination of validity requires an analysis of the prior art, the differences between the teachings of the prior art and the claims of the patent in suit, the level of skill in the art

at the time the invention was made, and whether or not the claims of the patent in suit would have been obvious to the person of ordinary skill in the art at the time the invention was made. *Graham v. John Deere*, 383 U.S. 1 (1966).

2. ART CITED BY EXAMINER

The Court first will review the scope and content of the prior art cited by the Patent Examiner, as listed on the first page of the '332 Patent.

(a) The Shank reference, U.S. Patent no. 3,937,854, (DX-29) teaches applying particles of polymeric material to glass items, particularly bottles. Shank suggests a preheating step (col. 3, line 27 and col. 6, line 35), exposing glass articles to particles of polymeric material, including Surlyn (col. 4, line 34), in a liquid (col. 4, line 45) of a dry (col. 4, line 52) dispersion by using fluidized bed (col. 4, line 67) or spray (col. 6, line 31) methods. Shank suggests to apply a coating over "substantially the entire ... article" (col. 7, line 49) or "only to a limited area" of it (col. 7, Lines 55-6) and a post-heating step (col. 4, line 63). The Shank coating "resists" but does not prevent "scattering of glass fragments" if the bottle "is broken" (col. 4, line 8). The Shank patents do not have a "securing" step akin to that in the '332 Patent; the bottles are carried on "chucks" (col. 5, line 63) which are not described or depicted.

(b) The Campagna Patent no. 3,856,498 (DX-32) discloses methods of applying a "shatterproof" coating of polymeric material to a glass vessel (col.1, line 66). It suggests "a preheat cycle, a particulate coating application" and a post-heating or "fusing" step (col. 4, lines 20-2). The preheated items can be "dipped ... into a fluidized bed" (col. 5, line 35). However, Campagna recognizes that "solvent systems" like a plastisol dip or "spray methods" can

provide equivalent coating results (col. 5, lines 37-8). Campagna grips the bottles at the neck between a fixed and a spring-loaded element, (Fig. 4, part 34), or alternatively, grips the neck between flat and notched elements (Fig. 12, part 92). These holders cover part of the bottle and so, "portions of the neck are not coated" (col. 7, lines 39-40).

(c) The Sharretts Patent no. 3,440,078 (DX-37) is for an apparatus that will hold the article to be coated and also "mask those areas on which a coating is not desired" (col. 1, lines 51-2). The combination holding and masking apparatus is a hollow "manifold" (col. 2, line 51) through which pressurized air is blown thus preventing the coating "material from coming into contact with the heated surface of the object" being coated. (col. 2, line 45-6).

(d) The Koerper Patent no. 3,989,859 (DX-27) discloses the preheating of an article (col. 2, line 33) that can be cylindrical (col. 3, line 26 & Fig. 3), and post-heating it (col. 5, line 19) after coating. Koerper exposes the article to particles of polymeric material (col. 5, line 3-4 and col. 6, line 68) using a spray (col. 5, line 8) or a fluidized bed (col. 6, line 59) application. Koerper coats the entire tubular article while it turns on rotating rollers, which are cooled "below the melting point" of the polymeric coating material (col. 5, line 31-42).

(e) The Sentementes Patent no. 3,959,525 (DX-28), the Audesse Patent no. 3,902,946 (DX-31) and the Van Laar Patent no. 2,868,620 (DX-45) disclose methods of safety-coating photoflash lamps with polymeric materials. During the coating step, Sentementes simply clamps the bottom of the lamp, Audesse similarly uses "chucks" (col. 5, line 14&16) and Van Laar holds the bulbs in a "stand." Sentementes uses a fluidized bed of polymeric particles with preheating and postheating steps (col. 4, line 35-46).

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Van Laar dips the bulbs into a "dispersion of thermo-plastic ... particles ... in a liquid" (col. 2, line 35-6) including polyvinyl chloride particles in a liquid dispersion (col. 4, line 17&39). These particulate coatings differ from Audesse who uses a thermoplastic sleeve that is vacuum shrunk onto the bulb and heated.

(f) The Boyce Patent no. 3,018,187 (DX-42) teaches the application of a moisture-impervious coating to the glass envelope of a fluorescent lamp. Dip and spray applications are suggested (col. 5, line 19-21). The entire glass envelope receives the coating, and no disclosure or no suggestion is made about securing or masking the base caps. Boyce does suggest removing "any excess coating" (col. 4, line 13) manually with an "air knife" (col. 4, line 17).

The references cited by the Examiner involve some aspects of holding, preheating, masking, coating with particles in fluid dispersions, and post-heating. No one of these patents, however, discloses all of the process steps claimed in the '332 Patent. These references do not suggest combining their features one with another in any way that would suggest that the combined steps of the patented process would be obvious to a person skilled in the art of coating. No one of these patents suggests accomplishing the same function, in the same way, to obtain the result claimed in the '332 Patent. After reviewing these references and other patents in the search fields listed, the Patent Examiner allowed a patent to issue on the process claimed in the '332 Patent.

3. THE PATENTS PRESENTED BY TROJAN

Next, the Court examines the prior art offered at trial by Trojan in support of its claim of invalidity.

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(a) Trojan relied on the pioneer patents on fluidized bed coating, which are the Gemmer (DX-44) and Dettling patents (DX-38, 40&43). The Dettling '245 reference states, in pertinent part:

> As is known, articles can be coated by the use of fluidized beds. The coating material in powder form is placed in a fluidized state and the article to be coated is heated to a temperature equal to or above the softening or melting point of the coating material, is then placed in the dense phase of the bed, moved to and fro, and removed when the desired coating thickness is attained,... (Col. 1, lines 12-20)
>
> * * *
>
> The use of such beds has provided superior coatings as well as new processes which avoid certain difficulties of old methods. For example, it is possible to coat articles of irregular and complex shapes very quickly and simply and yet attain uniformity in spite of shape differentials. Also, solvents and similar materials needed in prior methods are obviated. (Col. 1, lines 36-42)
>
> The Dettling patent states among its objectives:
>
> . . . the provision of a means and a method for holding articles in fluidized beds so that the article to be coated is coated only at desired areas. A still further objective is the provision of a holder and a method of holding which

> leads to a uniform, well defined boundary line between the area to be coated and the area to remain uncoated. These and other objects will appear hereinafter.
>
> These objectives are accomplished by the provision of holders which are clamps having a covering area corresponding in size and shape to the area of the article that is to remain uncoated... (Col. 1, lines 60-71).
>
> * * *
>
> Pressure is exerted through the clamps to hold the article... (Col. 2, lines 25-26)

(b) The Dettling '245 reference goes on to describe a method for coating a tube, with reference to FIG. 1, as follows:

> The tube 4 is preheated to the desired temperature. When the tube is at the desired temperature, the operator picks it up with the cold holder and carries it to the fluidized bed and immerses it in the dense phase of the bed for such time as is necessary, usually about 5 to 10 seconds. With the article held by the holder, a plurality of dippings can be made, and the coated article may then be post heated, if required for complete coating fusion. (Col. 2, line 67-Col. 2, line 3)

Claim 8 of the Dettling '245 reference, reprinted as DX-59, reads as follows:

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> A method for applying a coating to a limited portion of the surface of an article comprising the steps of heating the article to a temperature above the melting point of a pulverulent coating material, engaging said article with a holding device which covers and encloses all portions of the article on which a coating is not desired, immersing the article in the pulverulent coating material so that the coating material in proximity to the article surface sinters and fuses into a complete coating, and during the immersion maintaining the holding device at a temperature below the sintering temperature of the coating material.

Dettling U.S. Patent No. 3,419,409 (DX-38) discloses various examples of fluidized bed powder coating processes in which an article such as a pipe is preheated, exposed to a fluidized bed of powdered polymeric material, and postheated. Gemmer Patent no. 2,844,489 (DX-44) is described as a coating for metal articles (col. 1, line 30), and the eleven examples are given (cols. 7 thru 10) for coating various metal articles. In Dettling Patent no. 2,974,060, (DX-43) the four coating examples given (cols. 4&5) are metal articles. The Knapsack British reference (DX-46) is an equally limited disclosure, and is cumulative of Gemmer.

The Dettling and Glemmer patents are cited in the Sharretts (DX-37) and in the Sentementes (DX-28 at col. 2, line 30) patents, which the Examiner did review and cite against the '332 Patent. Thus, Trojan did not prove that the Examiner failed to consider the Gemmer and Dettling patents when he searched the art pertinent to the '332 Patent. Furthermore, Dettling and Gemmer are limited to fluidized bed coating and thus, these are more narrow disclosures

than the art cited against the '332 Patent by the Examiner, which teaches several forms of dip coating and spray methods. Also, Dettling and Gemmer deal almost exclusively with coating metal objects.

(c) The Evans Patent no. 3,602,759 (DX-34), issued August 31, 1971, is a product patent for a lamp protected with a shrunk plastic "sheath" (col. 1, line 62). The Evans reference recites that it relates to electric lamps and "has particular reference to a fluorescent lamp that is provided with a jacket or sheath which comprises an integral part of the lamp." (Col. 1, lines 5-6). One of the problems it describes is that "the envelopes of fluorescent lamps are fabricated from relatively thin walled glass tubing and are, therefore, quite fragile. The lamps are, thus, mechanically weak, and are easily and frequently broken during handling, shipping, etc." (Col. 1, lines 24-27). These problems were solved "by enclosing all or part of the lamp in a sleeve that is fabricated from shrinkable light transmitting plastic. Preferably the sleeve is made of heat shrinkable plastic that is initially of such dimensions and so oriented that it will fit loosely over the lamp and, upon being heated, will shrink and form a smooth tight-fitting sheet that conforrns to the shape of the part of the lamp which it encloses." (Col. 1, lines 57-59).

The Evans patent further provides:

> Tests have shown that fluorescent lamps provided with such shrink fit plastic sheaths can frequently be dropped from heights of 3 to 4 feet without breaking. Moreover, when the bulb does break the sheath remains intact and preserves the integrity of the lamp. The danger that the force of the resulting implosion of the

> envelope may scatter glass fragments, lamp parts, dust, etc. is accordingly eliminated."

(Col. 6, lines 8-14).

The Evans patent contemplates that the sheath extends over the end caps and is described as follows:

> The lamp is inserted into the tubing and centered so that about 1-1/2 inches of the plastic sleeve extends beyond each of the base faces. The lamp is then supported by the base pins or base faces so that the plastic sleeve is not held or restrained in any way and is thus free to move as it shrinks to fit the lamp.
>
> The lamp is then uniformly heated to a temperature of approximately 400° F. by blowing heated air on the lamp while it is rotated. This can be achieved by exposing the lamp to radiant heat or by placing it in an oven. When the plastic sleeve has shrunk into tight-fitting engagement with the lamp, the lamp is allowed to cool, during which time contact with the hot plastic is avoided to prevent scratching, etc. After the lamp is cooled, the excess plastic at each end of the lamp is trimmed with a sharp cutting tool.

(D X 60.)

In *Trojan. Inc. v. Shat-R-Shield. Inc.*, 13 U.S.P.Q.2d 1732,1733-1734 (Fed.Cir. 1989), the Court of Appeals for the Federal Circuit held that the Evans patent is directed to a protective plastic coating on a fluorescent lamp, and that the Evans patent was

pertinent prior art as to U.S. Patent No. 4,506,189, the product patent. The Court of Appeals further held that Evans "teaches a protective coating on a fluorescent lamp by covering the tube and end caps with adherent polymeric material which prevents disbursement of glass shards."

Coating a glass lamp with a thermoplastic sleeve is disclosed in the Audesse Patent no. 3,902,946, (DX-31) which the Examiner cited in the '332 Patent. The prior search fields for the Evans and Audesse patents overlap in class 156/86 which is listed on both of these references. Evans contains no teaching about securing the end caps or the electrical connecting pins against radial displacement. Evans and Audesse do not preheat the article to be coated. Evans does not suggest masking the pins or any portions of the end caps. In fact, Evans requires that the "excess plastic ... be trimmed by a suitable cutting tool after the plastic has cooled." (col. 3, line 20-22. This trimming step is eliminated by the masking approach in the '332 Patent. Additionally, the Evans patent does not disclose the fluidized bed coating process.

(d) The Quirk Patent no. 3,102,409 (DX-41) is a process patent for applying a moisture-impervious coating of silicone to only the glass envelope of a fluorescent lamp. The Quirk patent describes "rolling" the lamps through a solution, thereby covering the entire external service of the glass envelope, while limiting the depth of immersion to prevent coating of electrical contacts. (DX-41, at col.2, line 69 - col. 3, line 6).

Quirk is cumulative of the Boyce Patent no. 3,018,187, (DX-42) which the examiner cited against the '332 Patent. In fact, the Boyce reference, which discloses both dip and spray applications, is broader than Quirk, which only dips the tube. No securing step and no preheating step is suggested in Quirk and no masks are used.

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The lamp rolls through a silicone emulsion with its ends resting on guide rails. (col. 3, line 3).

(e) The Al Patent no. 3,565,664 (DX-35) is another prior art reference from the same class of patent, as the Shank and Sentementes references. Al applies a coating to metal articles to prevent corrosion. Al masks the threads of pipe by wrapping cork or asbestos around the parts. No securing step is necessary or suggested. The shatterproofing function of the '332 Patent is not suggested in the Al patent.

(f) The Beene Patent no. 3,535,136 (DX-36) discloses a "tubular mask" to cover the threads on a pipe (col. 2, line 20). The mask is tapered to form a definite raised edge to the coating, so it will mate with a coated joint to be threaded on the pipe.

(g) Van Laar patent No. 2,868,670 (DX-45), issued January 13, 1959, discloses providing a coating on a flash bulb by immersing the glass envelope in a dispersion of polyvinyl chloride (PVC) resin particles, and subsequently heating it to solidify the coating.

(h) Thomas Patent No. 3,621,323, issued November 16, 1971, relates to a coated incandescent electric light bulb. The coating is an elastomeric coating extending over the glass envelope and over the upper portion of the base of the bulb. The patent contains a specific teaching that the coating should extend at least one-eighth of an inch (1/8") over the base. Upon shattering of the glass, the coating has sufficient strength to remain attached to the metallic base. The resultant "pod" contains the glass fragments inside the pod.

The Thomas patent suggests a dip process coating that is cumulative of the Van Laar Patent no. 2,868,670 (DX-45) which the Examiner reviewed before he allowed the '332 Patent. Van Laar

Appendix B

U.S. Patent No. 2,868,670, discloses, at col. 2, lines 32-39, providing a plastic coating on a flash bulb by immersing the glass envelope in a dispersion of PVC particles in a liquid and subsequently heating to solidify the polymeric material (DX45).

The prior art patents offered by Trojan are cumulative of, and in many ways are more limited disclosures than, the patents reviewed by the Patent Office when it issued the '332 Patent.

4. DIFFERENCES BETWEEN THE PRIOR ART AND THE PATENT IN SUIT

(a) None of the prior art references suggest a securing step having the function, form, and result of that found in the '332 Patent. The early coating process patents hold the workpiece in tongs or simple apparatus. Even the glass and lamp references suggest only unsophisticated holders, including chucks or clamps. The fluorescent lamp references of Boyce, Quirk, and Evans suggest no securing step or apparatus at all, and none can be clearly envisioned from those disclosures. Nowhere does the prior art deal with or suggest the problem of displacement or misalignment of end caps sealed to the tubular article that is to be heated and then coated.

(b) The combination of process steps in the '332 Patent is not disclosed in any single prior art patent. None of the patents offered by Trojan teach or suggest a method of coating the glass envelope and predetermined portions of the end caps with a uniformly thick coating of polymeric material that will contain glass shards and maintain the end caps if the lamp is broken.

The Boyce, Quirk, and Evans references do not teach masking, rather they suggest that unwanted coating should be manually cut off as the final step. No reference suggests masking to achieve the

function of ensuring the predetermined extent of the coating using a moveable engageable mask and no reference suggests a method of masking that provides a coating, determined in advance, sufficient to contain both the glass shards and the end caps if the lamp shatters.

(c) Dip coating methods using polymeric particles dispersed in the fluidized bed or in a liquid dispersion are found in the prior art. So too is exposing only desired portions of the article to be coated using methods of partial or total immersion. Primarily, the prior art suggests methods for coating metal or other thick articles that retain heat, unlike the thin glass wall of a fluorescent lamp.

Dip coating with fluidized particles is not analogous to the preformed sleeve that is heat shrunk onto an article. With the sleeve, there is no preheating of the lamp. This also makes securing unnecessary. Rather, the sleeve may be preheated before it is placed around the lamp. See Audesse Patent no. 3,902,946, (DX-31) col. 4, line 20-23 and Evans Patent no. 3,602,759, col. 2, line 75-col. 3, line 1.

(d) The safety coating of polymeric material applied in the '332 Patent is substantially different and not suggested by the moisture-impervious coating applied such as in the Boyce Patent no. 3,018,187 (DX-42) that the Examiner cited. In these references, there is no preheating to promote adherence of the coating material, and only the glass is coated with the silicone emulsion. Exposing the glass envelope and a predetermined portion of each end cap on a fluorescent lamp is not disclosed and is not suggested by the prior art.

(e) After considering the scope and content of the prior art, the Court finds that the differences between the prior art and the invention claimed in the '332 Patent would not have been obvious

to one of ordinary skill in the art. No prior art reference suggests that references be combined into the process disclosed in the '332 Patent.

(f) Trojan failed to present clear and convincing proof that the process in the '332 Patent was known or used by others before Nolan and Karlsson invented it. The Robroy deposition, referred to by Trojan, concerns a process that was kept in confidence.

(g) Trojan failed to present clear and convincing evidence to overcome the presumption of validity for the '332 Patent. The United States Patent Office issued the '332 Patent after their examination of the prior art, from which it was decided that the process described by Nolan and Karlsson was a new, useful and non-obvious invention.

(h) In addition, there are secondary indicia of non-obviousness. The process in the '332 Patent is used successfully by SRS and the product enjoys customer acceptance, which is directly attributable to the '332 Patent process. The invention satisfied a longfelt need, and the process succeeded where others had failed.

F. THE TROJAN PROCESS AND INFRINGEMENT CLAIM

1. Trojan, at its manufacturing plant in Mt. Sterling, applies polyvinyl chloride (PVC), a polymeric material, as a coating to the glass envelope and a portion of each end cap of fluorescent lamps, using a process that plaintiff has alleged infringes the '332 Patent.

2. The method used by Trojan to provide its coated fluorescent light bulbs does not use a powder, does not use a fluidized bed, and does not use Surlyn. Trojan's method was independently developed

in its facility in Meadsville, Pennsylvania in 1983 and 1984, and was put into commercial operation in Mt. Sterling, Kentucky in the summer of 1984. Trojan's method utilizes a liquid called a plastisol. The plastisol is a dispersion of extremely small particles of polyvinyl chloride suspended in a liquid plasticizer. Lawrence Rice, who developed the Trojan process, testified that liquid coating was selected by Trojan due to its simplicity and the desire to avoid patent problems.

Joseph Satterlee, a former Trojan employee, acknowledged that the overall function and result of the two processes were the same. Satterlee agreed that the Trojan process "steps provide the fluorescent lamp with a safety coating of polymeric material that extended over the entire outer surface of the glass envelope and portions of the end caps, [Trojan] determined in advance." PX-17, page 17, lines 1-8 (hereinafter denoted by page:line, e.g., 17:1-8). While both Trojan and SRS apply a plastic coating that functions to maintain the glass envelope and the end caps in association if the fluorescent lamp is broken, the methods of applying the coating are not equivalent.

3. In the Trojan process, the ends of each fluorescent tube are placed manually into a supporting engagement with adapters. The tube is supported at its opposite ends in a manner analogous to the way the bulb is supported in use in fluorescent light fixtures. The tube is rotated by a mechanism which drives the adaptor at one end only and, while continuously rotating, the tube is placed in an oven for a short period of time, then withdrawn from the oven, and then lowered into touch contact with a liquid bath of the above-mentioned plastisol. After a coating of the liquid plastisol has built up on the exterior of the tube, the tube is raised to remove it from contact with the bath, and, still rotating, is placed in an oven where the plastisol is transformed into a transparent, tough gel.

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4. The Trojan process does not involve coating a "predetermined portion" of the end caps, as set forth in the preamble of Claim 1. The portion of the end caps which is coated varies from lamp to lamp, and thus is not "predetermined."

5. Trojan's heating of the lamps before and after coating does not cause the end caps to loosen, and therefore no securing of the end caps is necessary. In the Trojan process, the tube is driven for rotation at only one end. There is no use of synchronized drives as in the SRS process. Trojan's method does not involve "securing" the end caps as set forth in Step (a).

6. The Trojan coating process and the coating process claimed in the patent in suit involve fundamentally different mechanisms. Trojan's process involves transforming the liquid plastisol into a tough, transparent gel with limited application of heat, without melting; the patent involves heating the powder to its melting point to melt it into a liquid, followed by cooling to return it to a solid state.

7. The Trojan process does not involve preheating the fluorescent lamp to a temperature "above the melting point of said polymeric material" as set forth in step (b). Trojan's polymeric material is unplasticized PVC in a liquid plastisol, which does not have a melting point. Trojan's preheating does not perform the same function nor any analogous function of the SRS method. The liquid plastisol will coat the bulb regardless of whether it is preheated.

8. The Trojan process does not include masking as recited in step (c). In the Trojan process, coating of the pins cannot occur because they are kept above the level of the plastisol, and masking is not needed. The adapters used by Trojan do not function as masks. Furthermore, the step of placing the ends of the bulb in the adapters in the Trojan process occurs before heating of the lamp, and

accordingly the requirement of step (c) that the masking occur "subsequently" to the "preheating" would not be met by Trojan's placement of the bulb ends in the adapters, even if the adapters did function as masks.

9. The Trojan method does not meet the limitations of step (d) because Trojan does not use a fluidized bed of powder, and Trojan does not apply a coating of powder.

10. Trojan does reheat its bulbs after coating, but the reheating does not melt and fuse a powder, and does not form an applied powder into a coating. The function of Trojan's reheating is to cure a liquid plastisol, not to melt and fuse a powder. The result of the reheating is a solid, clear gel, whereas the result of the claimed step (e) is a fused powder which does not become clear and solid until after it is cooled.

11. The Trojan method does not involve unmasking the pins and end caps as set forth in step (f), nor does it involve "unsecuring" the end caps as set forth in step (f), because the end caps are not masked or "secured" in the manner claimed.

II. CONCLUSIONS OF LAW

A. JURISDICTION AND VENUE

The Court has subject matter jurisdiction pursuant to 28 U.S.C. §§1338, 2201, and 2202 and personal jurisdiction over both parties. Venue is proper in this district.

B. VALIDITY

1. A patent is presumed to be valid, and the patent statute, 35

U.S.C. § 282, places the burden of proving facts establishing invalidity on the person asserting the claim. The patent challenger must establish those facts by clear and convincing evidence, and the ultimate burden of persuasion never shifts from the patent challenger. *Jones v. Hardy*, 727 F.2d 1524,1528 (Fed.Cir. 1984).

2. In challenging validity under 35 U.S.C. § 103, the challenger's burden is to show that "the difference between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103. In applying the test, the Court must determine: (a) the scope and content of the prior art; (b) the differences between the prior art and the patented design; and (c) the level of ordinary skill in the art at the time the invention was made. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). Secondary considerations such as commercial success are also relevant to the issue of validity. *Graham v. John Deere Co.*, 383 U.S. at; 17-18, 86 S.Ct. at 693. For commercial success to have relevance, a nexus must be established between the merits of the claimed invention and the commercial success. *Cable Electric Products, Inc. v. Genmark, Inc.*, 770 F.2d 1015,1027 (Fed.Cir. 1985).

3. Trojan failed to prove clearly and convincingly that any reason exists to declare the '332 Patent invalid. *Jones v. Hardy*, 727 F. 2d 1524, 1528 (Fed. Cir. 1984). Trojan failed to overcome the statutory presumption of validity accorded the '332 Patent. 35 U.S.C. § 282; *Carella v. Starlight Archery*, 804 F. 2d 135, 138 (Fed. Cir. 1984), *aff'g* 597 F. Supp. 613 (E.D. Mich. 1984).

4. Trojan failed to prove clearly and convincingly that some single prior art reference disclosed each and every element of the patented invention. *Carella*, 804 F.2d at 135; *RCA Co. v. Applied*

Digital Data Systems, Inc., 730 F. 2d 1440 (Fed. Cir. 1984); *Panduit Corp. v. Dennison Mfg.*, 774 F. 2d 1082, 1101 (Fed. Cir. 1985). Trojan failed to come forward with clear and convincing evidence that the invention in the '332 Patent was known or used publicly by others before Nolan and Karlsson filed their application.

5. Trojan failed to present clear and convincing evidence sufficient to overcome the presumption of validity accorded patents issued after examination and evaluation by an Examiner of the United States Patent Office. *Structural Rubber v. Park Rubber*, 749 F. 2d 707 (Fed. Cir. 1984); *Cordis Corp. v. Medtronic, Inc.*, 780 F. 2d 991, 996 (Fed. Cir. 1985). The validity of a process patent is unimpaired by whether the product is also patentable. *In re Armstrong*, 75 F. 2d 826, 832 (C.C. P.A. 1935) *cert. denied*, 296 U.S. 576 (1935); *Application of Naylor*, 369 F. 2d 765, 768 (3rd. Cir. 1972).

6. Trojan failed to prove clearly and convincingly that the subject matter of the invention in the '332 Patent would have been obvious to one skilled in the art at the time the invention was made. *Carella*, 804 F.2d at 135; *Alco Std. Corp. v. TVA*, 808 F. 2d 1490, 1498 (Fed. Cir. 1986) *aff'g* 597 F. Supp. 133 (W.D. Tenn. 1984). The Court rejects the conclusion of defendant's expert King, who "envisioned" that unstated aspects were inherent in the prior art disclosures. King's "retrospective view-of inherence is not a substitute for some teaching or suggestion" of the claimed combination in a prior art reference. *In re Newell*, 891 F.2d 899, 901 (Fed. Cir. 1989); *SmithKline Diagnostics Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 887 (Fed. Cir. 1988). In addition, the "mere fact that the prior art could be modified" to resemble the '332 Patent process "would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Mills*, 916 F. 2d 680, 682 (Fed. Cir. 1990).

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7. Trojan failed to meet its burden of proof on its allegation that the Patent Examiner failed to consider pertinent prior art. *Solder Removal v. USITC*, 582 F. 2d 628, 633 n. 9 (C.C.P.A. 1978); *Lindemann Maschinenfabrik v. Am. Hoist & Derrick*, 730 F. 2d 1452, 1460 (Fed. Cir. 1984). None of the references offered by Trojan are more pertinent than the prior art considered by the Examiner. The patents and prior art submitted by Trojan were essentially cumulative of the referenced art. *Rosemount, Inc. v. Beckman Instruments*, 727 F. 2d 1540, 1546 (Fed. Cir. 1984).

8. Evidence of commercial success that resulted from an invention is one of the secondary considerations that indicates the invention was not obvious to one skilled in the pertinent art. *Graham v. Deere*, 383 U.S. 1, 17 (1986). The testimony of Mr. Nolan that sales of fluorescent lamps coated using the patented process had grown from zero to over $4 million is relevant evidence of the commercial success of the product. *Johns-Manville Corp. v. Guardian Indus.*, 586 F. Supp. 1034 (E.D. Mich. 1983), *aff'd*, 770 F.2d 178 (Fed. Cir. 1985); *Jack Winter, Inc. v. Koratron, Inc.*, 375 F.Supp. 1 (N.D. Cal. 1974).

The product produced by this patent satisfied a long-felt need for such a product, and others had tried to produce such a product and failed. *See Carella*, 804 F.2d at 135; *Graham v. Jones*, 383 U.S. 1,17 (1966). Moreover, the Court has recognized its obligation to construe the claims of the '332 Patent so as to sustain their validity as far as possible. *Carman Indus., Inc. v. Wahl*, 724 F. 2d 932, 937 n. 5 (Fed. Cir. 1983).

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C. INFRINGEMENT

1. The inquiry before this Court is whether the defendant's process infringes upon the process set forth in the '332 patent. To resolve this inquiry, first the "patented invention as indicated by the language of the claims must first be defined (a question of law), and then the trier must judge whether the claims cover the accused device (a question of fact)." *Envirotech Co. v. Al George Ind.*, 730 F. 2d 753, 758 (Fed. Cir. 1984). In addressing the first step, the patent claims were "construed in light of the specification." *U.S. v. Adams*, 383 U.S. 39, 49 (1966), where necessary to ascertain "the scope and meaning of the language employed in the claims," *Autogiro Co. of America v. U.S.*, 384 F. 2d 391, 397 (Ct. Cl. 1967) (subs. hist. om.) as one skilled in the art would construe them. *SmithKline Diagnostics Inc. v. Helena Labs. Corp.*, 859 F. 2d 878, 882 (Fed. Cir. 1988).

2. A finding of infringement requires that each claim limitation or its equivalent be present in the accused method. *Lemelson v. United States*, 752 F.2d 1538, 1551 (Fed. Cir. 1985). In order for a court to find infringement, the plaintiff must prove, by a preponderance of the evidence, the presence of every element or its substantial equivalent in the accused device. To be a "substantial equivalent" the element substituted in the accused device for the element set forth in the claim must not be such as would substantially change the way in which the function of the claimed invention is performed. *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 935 (Fed.Cir. 1987); *Lemelson v. United States*, 752 F.2d 1538, 1551, 224 U.S.P.Q. 526, 533 (Fed.Cir. 1985); *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 3 U.S.P.Q.2d 1321 (Fed.Cir. 1987). In light of the differences between the Trojan process and that of Claims 1, 4, and 7, the Trojan process does not literally infringe those claims.

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3. A finding of infringement under the doctrine of equivalents requires finding that the accused method or device performs substantially the same function in substantially the same way to obtain the same result. Where the function is performed in a different way, there is no equivalence. *Spectra Corp. v. Lutz*, 839 F.2d 1579, 1582 (Fed.Cir. 1988). The fact that two devices achieve substantially the same result creates no presumption that they do so in substantially the same way. *Universal Gym Equipment Inc. v. Erwa Exercise Equipment Limited*, 827 F.2d 1542, 1548 (Fed.Cir. 1987). The numerous differences between the Trojan process and the claimed process compel a finding that the Trojan coating process does not coat bulbs in substantially the same way as the claimed process. Consequently, the Trojan method does not infringe Claims 1, 4, and 7 under the doctrine of equivalents.

4. The burden is on the patentee to prove that the range of equivalence which it seeks would not ensnare the prior art. *Wilson Sporting Goods Co. v. David Geoffrey and Associates*, 904 F.2d 677, 684-685 (Fed.Cir. 1990); *Stewart-Warner Corp. v. City of Pontiac*, 767 F.2d 1572, 226 U.S.P.Q. 676, 682 (Fed.Cir. 1985). The prosecution history of a patent is also to be considered in interpreting the claims. *McGill v. John Zink Co.*, 736 F.2d 666, 221 U.S.P.Q. 944 (Fed.Cir. 1984).

5. The concerns behind the doctrine of equivalents is not present in this case. The doctrine was developed to prevent an infringer from stealing the benefit of an invention. Trojan did not seek to misappropriate the work of Nolan and Karlsson. Rather, Trojan expended great time and effort to develop its own method and "invent around" the adversely held patent. *Texas Instruments v. U.S. International Trade Commission*, 805 F.2d 1558, 1572 (Fed. Cir. 1986).

6. In the present case, the claims cannot be construed to read on the accused method, either literally or under the doctrine of equivalents. The process obtains essentially the same result, however, they do not perform in substantially the same way. The Trojan process is a liquid coating process which is fundamentally different than the powder coating process claimed in the '332 patent.

D. UNENFORCEABILITY

1. A patent is unenforceable where the patentee has acted inequitably. *Keystone Driller v. General Excavator Co.*, 290 U.S. 240 (1933). Inequitable conduct may involve failure to disclose material information or submission of false information. Proof of inequitable conduct requires threshold showings of materiality and intent. *J.P. Stevens & Co., v. Lex Tex, Ltd.*, 747 F.2d 1553,1559-60 (Fed. Cir. 1984).

2. Prior to the establishment of the Federal Circuit, various courts utilized different standards of materiality, the strictest being the objective "but for" standard under which proof of materiality requires a showing that the patent would not have issued but for the inequitable conduct. *See Plastic Container Corp. v. Continental Plastics*, 607 F.2d 885, 889 (10th Cir. 1979). The Federal Circuit has held the standard of 37 C.F.R. § 1.56(a), whether there is a substantial likelihood that a reasonable Examiner would consider the information important, to be the appropriate starting point. *J.P. Stevens*, 747 F.2d at 1559; *American Hoist & Derrick Co. v. Sowa & Sons*, 725 F.2d 1350, 1362 (Fed.Cir. 1984), *cert. denied*, 469 U.S. 821 (1984).

3. Once the thresholds of materiality and intent are established, the Court must balance them and determine as a matter of law

whether the patent should be held unenforceable due to inequitable conduct. *J.P. Stevens & Co.*, 747 F.2d at 1560. Questions of materiality and intent are interrelated, so that a lesser showing of the materiality of the withheld information may suffice when an intentional scheme to defraud is established. Whereas a greater showing of the materiality of withheld information would necessarily create an inference that its non-disclosure was wrongful. *American Hoist*, 725 F.2d at 1363 (citing *Digital Equipment Corp. v. Diamond*, 653 F.2d 701, 716 (1st Cir. 1981)).

4. The relationship of patent attorneys to the Patent Office requires the highest degree of candor and good faith. "The Office must rely upon their [patent attorneys] integrity and deal with them in a spirit of trust and confidence." *Kingsland v. Dorsey*, 338 U.S. 318, 319 (1949).

5. The duty of candor and good faith is summarized as follows, at 37 C.F.R. § 1.56(a):

> A duty of candor and good faith toward the Patent and Trademark Office rests on the inventor, on each attorney or agent who prepares or prosecutes the application and every other individual who is substantially involved in the preparation of prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application. All such individuals have a duty to disclose to the Office information they are aware of which is material to the examination of the application. Such information is material where there is a substantial likelihood that a

> reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. The duty is commensurate with the degree of involvement in the preparation or prosecution of the application.

6. Once a Court finds a violation of the duty of candor amounting to inequitable conduct, every claim of the patent — not just the particular claims to which the inequitable conduct is directly connected — is unenforceable. *J.P. Stevens & Co. v. Lex Tex, Ltd.*, 747 F.2d 1553, 1561 (Fed.Cir. 1984).

7. Trojan contends that SRS's conduct, including false marking, advertising, bad faith in bringing and maintaining this action, and Nolan's failure to disclose the prior art of which he was aware, constitutes inequitable conduct rendering the patent unenforceable.

8. Trojan has failed to prove its defense of unenforceability. Trojan presented some evidence that SRS continued using the patent number for its product patent until all appeals of the litigation concerning that product patent were exhausted. After that, some brochures with the product patent number were distributed inadvertently. There was no proof of wrongful intent. *Sears, Roebuck & Co. v. Sears*, 744 F. Supp. 1297, 1308 (D. Del. 1990) ("bad intent is the essence of the defense" of unclean hands).

Moreover, the conduct concerned the product patent, and not the process "patent in suit." *Kolene Co. v. Motor City Metal Treating, Inc.*, 440 F. 2d 77, 84 (6th Cir. 1971). The conduct was not "directly related to the matter in litigation." *Keystone Driller Co. v. General Elec. Co.*, 290 U.S. 240, 245 (1933), *cited in Kearnev &*

Trucker Corp. v. Cincinnati Milacron Inc., 562 F. 2d 365, 371 (6th Cir. 1977).

9. Additionally, there is absolutely no evidence that material information was intentionally withheld with intent to deceive the Patent Office. The Court finds there was no breach of the duty of candor or any inequitable or wrongful conduct that would affect the enforceability of the '332 Patent.

E. ATTORNEYS' FEES

1. Under rule 11 of the Federal Rules of Civil Procedure, the signature of an attorney on a pleading, motion, or other paper that, to the best of the signer's knowledge, information, and belief, formed after reasonable inquiry, certifies the pleading is well grounded in fact and is warranted by existing law or a good faith argument for the extension, modification, or reversal of existing law, and that it is not interposed for any improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of litigation. If a pleading, motion, or other paper is signed in violation of this rule, the Court, upon motion or upon its own initiative, shall impose upon the party who signed it, a represented party, or both, an appropriate sanction, which may include an order to pay to the other party or parties the amount of the reasonable expenses incurred because of the filing of the pleading, motion, or other paper, including a reasonable attorney's fee.

"Under Rule 11, sanctions may be imposed if a reasonable inquiry would have disclosed that the pleading, motion or other paper was not well-grounded in fact." *Mann v. G & G Manufacturing, Inc.*, 900 F.2d 953, 959 (6th Cir.), *cert. denied*, 111 S.Ct. 387 (1990). The test for the imposition of rule 11 sanctions is whether the individual attorney's conduct was reasonable under the

circumstances. In other words, the attorney's conduct must "meet an objective standard of reasonableness under the circumstances." *Id.* at 958.

2. Under 28 U.S.C. § 1927, any attorney who multiplies the proceedings in any case unreasonably and vexatiously may be required by the Court to satisfy personally the excess costs, expenses, and attorney's fees reasonably incurred because of such conduct.

3. Under 35 U.S.C. § 285, the Court, in exceptional patent cases, may award reasonable attorney's fees to the prevailing party.

4. Trojan requests that this Court impose sanctions against SRS, pursuant to the above listed provisions. This request is primarily based upon the fact that this action was brought during the course of discovery in the earlier litigation.

5. The Court finds that this action was brought in good faith and on a reasonable belief that the '332 patent may have been infringed. SRS and its attorney could have reasonably believed that they had a basis for filing the lawsuit and the Court finds that their conduct met the objective standard of reasonableness under the circumstances. The Court does not find that there was any improper purpose in filing this lawsuit. Therefore, the Court declines to award attorney fees to Trojan in this case.

This 15th day of April, 1991.

s/ Karl S. Forester
KARL S. FORESTER, JUDGE

APPENDIX C — JUDGMENT OF DISTRICT COURT DATED APRIL 15, 1991

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF KENTUCKY
LEXINGTON

Civil Action No. 86-221

SHAT-R-SHIELD, INC.,

PLAINTIFF,

vs.

TROJAN, INC.,

DEFENDANT.

JUDGMENT

IT IS HEREBY **ORDERED AND ADJUDGED** as follows:

1. U.S. Patent No. 4,507,332 is valid.

2. U.S. Patent No. 4,507,332 is not infringed by the defendant, Trojan, Inc.

3. U.S. Patent No. 4,507,332 is enforceable.

4. Judgment is rendered in favor of the defendant on the Complaint, and the Complaint is dismissed with prejudice.

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5. Judgment is rendered in favor of the plaintiff, Shat-R-Shield, Inc., on the counterclaim.

6. Each party shall bear its own costs and attorney fees.

This 15th April, 1991.

s/ KARL S. FORESTER
KARL S. FORESTER, JUDGE

Notice is hereby given to the entry of this order or judgement on 4-15-91

Leslie G. Whitmer, Clerk

By: Sharon Vicolyk, D.C.

APPENDIX D — JUDGEMENT OF COURT OF APPEALS DATED MAY 1, 1992

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

91-1388, -1389

SHAT-R-SHIELD, INC.,
Plaintiff-Appellant,

vs.

TROJAN, INC.,
Defendant-Cross-Appellant.

JUDGMENT

Eastern District-of Kentucky
Filed

May 1, 1992

AT LEXINGTON
FRANCIS X. GINDHART
CLERK, U.S. DISTRICT COURT

ON APPEAL from the UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF KENTUCKY

In CASE NO(S). No. 86-221

Appendix D

This CAUSE having been heard and considered, it is

ORDERED and ADJUDGED:

AFFIRMED AND VACATED

ENTERED BY ORDER OF THE COURT

DATED May 1, 1992

Francis X. Gindhart, Clerk

APPENDIX E — OPINION OF COURT OF APPEALS, *TROJAN, INC., V. SHAT-R-SHIELD, INC.* (FED. CIR. 88-1528, 88-1529, OCTOBER 31, 1989)

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

88-1528, -1529

TROJAN, INC.,

Plaintiff-Appellant,

vs.

SHAT-R-SHIELD, INC.,

Defendant/Cross-Appellant.

Note: This opinion has not been prepared for publication in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent. The decision will appear in tables published periodically.

DECIDED: October 31, 1989

Before NIES, NEWMAN, and MICHEL, Circuit Judges.

NIES, CIRCUIT JUDGE.

Trojan, Inc., appeals from the final judgment of the United States District Court for the Eastern District of Kentucky, *Trojan, Inc. v. Shat-R-Shield, Inc.*, 703 F. Supp. 609, 8 USPQ2d 1391 (E.D. Ky. 1988), holding the four claims of United States Patent No.

4,506,189 ('189) in suit valid, infringed and enforceable, and enjoining Trojan from further infringement but awarding no damages. Shat-R-Shield, Inc., (SRS) cross-appeals, requesting a remand for an accounting for damages. Because we *reverse* the court's holding on validity, we need not reach the other issues raised in the appeal or cross-appeal.

OPINION

The general subject matter of the invention is a fluorescent lamp on which a plastic coating is placed to retain shards of glass if the tube is broken. Applying the proper law to undisputed facts, we reverse the court's holding that the '189 patent claims were not proved invalid for obviousness within the meaning of 35 U.S.C § 103 (1982). The district court erred in determining obviousness simply over the Van Laar patent. When considered with the teachings of the Evans and Thomas patents, the opposite conclusion is compelled. *Panduit Corp. v. Dennison Mfg., Co.*, 810 F.2d 1561, 1565, 1 USPQ2d 1593, 1595 (Fed. Cir. 1987).

Upon finding that Trojan's expert witness was not persuasive and credible,* the court held that "[t]his finding of noncredibility alone would prohibit Trojan from meeting its burden of proof on its invalidity claim." *Trojan, Inc.*, 703 F. Supp. at 617, 8 USPQ2d at 1396. That ruling is erroneous as a matter of law. Opinion testimony on the legal conclusion of obviousness is neither necessary to prove one's case nor controlling. *Avia Group Int'l, Inc. v. L.A. Gear Cal., Inc.*, 853 F.2d 1557, 1564, 7 USPQ2d 1548, 1554 (Fed. Cir. 1988). Rejection of such testimony here did not relieve the district court of its obligation to determine whether *each* of the inventions claimed, *i.e.*, each claim, would have been obvious to

*We have reviewed this testimony and fail to understand the basis for the district court's castigation of the expert personally. Simply rejecting the evidence is sufficient.

one of ordinary skill in the art from all of the teachings presented in the prior art before it.

The Evans patent, United States Patent No. 3,602,759, is directed to identical subject matter, *i.e.*, a protective plastic coating on a fluorescent lamp. The court first rejected Evans on the (grounds that "the claims of the [Evan's] invention do not demonstrate that the [coating] process is done 'in situ.'" *Trojan Inc.*, 703 F. Supp. at 617, 8 USPQ2d at 1396. Contrary to the court's understanding, a prior art patent must be considered for what it *teaches*, not merely for what it *claims*. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Also, it does not follow that because the sleeve of plastic disclosed in the Evans' patent is formed separately, *ipso facto*, no coating is "formed in situ." Indeed, the sleeve forms a coating with the application of heat once the sleeve is in place on the lamp. Finally, the district court failed to note that claim 1 of the '189 patent has no "in situ" limitation.

The court also erroneously discounted the Evans patent because it "was not practical and could not be used successfully commercially." *Id.* The relevance of a patent as prior art is not affected by whether the claimed invention was ever commercialized. *In re Blake*, 352 F.2d 309, 312, 147 USPQ 289, 291 (CCPA 1965) (patent statute does not require commercial use of subject matter of a prior-art disclosure for that disclosure to qualify as a reference); *cf. In re Deters*, 515 F.2d 1152. 1155, 185 USPQ 644, 647, (CCPA 1975) (that a reference is a "paper patent" is irrelevant to its value as evidence of level of skill in the art).

The court also erroneously ruled "that the Evans patent would not have issued if the [PTO] examiner had looked at the Thomas

patent." *Trojan, Inc.*, 703 F. Supp. at 618, 8 USPQ2d at 1397. Notwithstanding that gratuitous assessment of invalidity by the court, the Evans patent remains pertinent prior art.

The court discounted Thomas, U.S. Patent No. 3,621,323, as cumulative to Van Laar. *Id.* We do not agree. Thomas discloses a coating on an incandescent bulb, which, as Trojan point out, "filled the prior art gap between a one-time flashbulb [Van Laar] and a continuously illuminated lamp." Also, in the claimed invention, the coating on the lamp must surround the glass envelope and a "predetermined portion" of the end caps which prevents interference with an electrical connection. Thomas contains that teaching.

We conclude that the inventions of claims 1-4 of the '189 patent would have been obvious from the combined teachings of the references to one of ordinary skill in the art. *See Carella v. Starlight Archery,* 804 F.2d 135, 140, 231 USPQ 644 (Fed. Cir. 1986). Evans teaches a protective coating on a fluorescent lamp by covering the tube and end caps with adherent polymeric material which prevents disbursements of glass shards. The only limitations which even arguably are not disclosed by the Evans patent *alone* are: coating a "predetermined portion" of the end caps, recited in all the claims; and "in situ", recited in claims 2-4. The district court gave "predetermined portion" the meaning of "determined in advance" and the phrase "formed in situ" the meaning of unformed before placement on the lamp. Given those meanings, teachings of both limitations can be found in Thomas; at least "in situ" in Van Laar; and Evans supplies the suggestion for use of a plastic protective coating on either a single or double ended fluorescent lamp for the same purpose. By rejecting Evans and Thomas as refrences, the district court had an improper foundation upon which to base its decision. *Cf. In re Merck & Co., Inc.*, 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986)("Non-obviousness cannot be established by attacking references individually").